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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,135	03/23/2005	Yun-Hyun Cho	P5090/Doos	2558
41943	7590	04/19/2007		
GWIPS PETER T. KWON P.O. BOX 231630 CENTERVILLE, VA 20120			EXAMINER JACOBS, DUSTIN THOMAS	
			ART UNIT	PAPER NUMBER
			2834	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.		Applicant(s)	
	10/529,135		CHO, YUN-HYUN	
	Examiner		Art Unit	
	Dustin Jacobs		2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 February 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 10-2002-0059987, filed on 09/27/2002.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 15 and 16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In re claim 15, the multiple of paired slots with a center fixture at constant intervals on the rotor core are not supported by any of the figures or the specification. It should be noted that Figure 4a, 4b, and 5 are specifically for the stator core structure. In re claim 6, the paired slots with the center fixture on the rotor core in which the slot openings are opened to the inner or outer circumference is not supported by any of the figures or the specification. It should be noted that Figure 4a, 4b, and 5 are specifically for the stator core structure.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 11 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (US Patent No. 5,945,766) in view of Bakhuizen (US Patent No. 3,426,225).

Kim et al. '766 discloses:

- A multiple stage of flat board type BLDC motor (col. 8, line 42) that consists of more than one unit of said flat board type BLDC motor.
- A pair of end stators (127 and 129a, Fig. 8) consisted of an annular disk-shaped stator core (Fig. 9a and 9b) and a plurality of teeth cores (53, Fig. 9a) with winding coils (55, Fig. 9b) installed on one side of said annular disk-shaped stator core at constant intervals.
- A dual stator (129 and 127a, Fig. 8) of said annular disk-shaped stator core and the plurality of teeth cores (53, Fig. 9a) with winding coils (55, Fig. 9b) installed on both sides of said annular disk-shaped stator core at constant intervals.
- A dual rotor (123 and 123a, Fig. 8) of an annular disk-shaped rotor actuator (Fig. 4a).

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- A common shaft (133, Fig. 8) for mounting said dual rotor including a set of bearings (147 and 149, Fig. 8).
- A common housing frame (137, Fig. 7) for enveloping said pair of end stators, said dual stator and said dual rotor mounted on said common shaft.

Kim et al. '766 does not disclose:

- An annular disk-shaped circuit and rotor teeth such that the annular disk-shaped circuit and the stator teeth face each other.
- The annular disk-shaped circuit attached to the rotor actuator on both sides of the rotor frame.

Bakhuizen '225 discloses:

- An annular disk-shaped circuit (12-15, Fig. 2) and rotor teeth (6, Fig. 2) such that said annular disk-shaped circuit and the stator teeth (2 and 3, Fig. 2) face each other.
- The annular disk-shaped short circuit (12-15, Fig. 2) attached to the rotor actuator (9, Fig. 2) on both sides of the rotor frame (5, Fig. 2).

The advantage of Bakhuizen '225 is to achieve high speed coarse positioning by having short circuit rings as winding for the rotor for producing asynchronous operation (col. 2, lines 1-3).

Bakhuizen '225 teaches that it is known to provide an annular disk-shaped circuit (12-15, Fig. 2) and rotor teeth (6, Fig. 2) such that said annular disk-shaped circuit and the stator teeth (2 and 3, Fig. 2) face each other and provide the annular disk-shaped short circuit (12-15, Fig. 2) attached to the rotor actuator (9, Fig. 2) on both sides of the

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rotor frame (5, Fig. 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to an annular disk-shaped circuit (12-15, Fig. 2) and rotor teeth (6, Fig. 2) such that said annular disk-shaped circuit and the stator teeth (2 and 3, Fig. 2) face each other and provide the annular disk-shaped short circuit (12-15, Fig. 2) attached to the rotor actuator (9, Fig. 2) on both sides of the rotor frame (5, Fig. 2) as taught by Bakhuizen '225, since Bakhuizen '225 states that such a modification would achieve high speed coarse positioning by having short circuit rings as winding for the rotor for producing asynchronous operation (col. 2, lines 1-3).

In re claim 17, Kim et al. '766 discloses permanent magnets (45A-45H, Fig. 4a) on the annular disk-shaped rotor actuator (Fig. 4a; 123 and 123a, Fig. 8) facing the neighbored stator teeth core (53, Fig. 9).

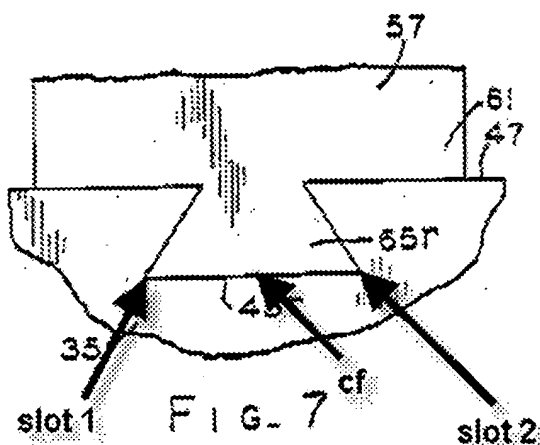
6. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. '766 in view of Bakhuizen '225 as applied to claim 11 above, and further in view of Forbes et al. (US Patent No. 5,918,360).

Kim et al. '766 in view of Bakhuizen '225 does not disclose:

- Said annular disk-shaped stator cores comprising of multiple paired slots with a center fixture at constant intervals along with a circumference of said annular-disk shaped stator cores either an inward opening or an outward opening along the circumference of said stator cores for inserting teeth core.

Forbes et al. '360 discloses:

- An annular disk-shaped stator core (5, Fig. 1 and Fig. 7) comprising of multiple paired slots (slot 1 and slot 2, edited Fig. 7) with a center fixture (cf, edited Fig. 7) at constant intervals along with a circumference of said annular-disk shaped stator core with an outward opening (Fig. 1) along the circumference of said stator cores for inserting teeth core (57, Fig. 4 and Fig. 7).



The advantage of Forbes et al. '360 is to provide the securement of the salient pole pieces to the yoke on respective preselected pitch axes (col. 2, lines 30-31) and to provide a simple design, easily assembled and economically manufactured product (col. 2, lines 36-38).

Forbes et al. '360 teaches that it is known to provide an annular disk-shaped stator core (5, Fig. 1 and Fig. 7) comprising of multiple paired slots (slot 1 and slot 2, edited Fig. 7) with a center fixture (cf, edited Fig. 7) at constant intervals along with a circumference of said annular-disk shaped stator core with an outward opening (Fig. 1) along the circumference of said stator cores for inserting teeth core (57, Fig. 4 and Fig. 7). It would have been obvious to one having ordinary skill in the art at the time the

invention was made to provide an annular disk-shaped stator core (5, Fig. 1 and Fig. 7) comprising of multiple paired slots (slot 1 and slot 2, edited Fig. 7) with a center fixture (cf, edited Fig. 7) at constant intervals along with a circumference of said annular-disk shaped stator core with an outward opening (Fig. 1) along the circumference of said stator cores for inserting teeth core (57, Fig. 4 and Fig. 7) as taught by Forbes et al. '360, since Forbes et al. '360 states that such a modification would provide the securement of the salient pole pieces to the yoke on respective preselected pitch axes (col. 2, lines 30-31) and to provide a simple design, easily assembled and economically manufactured product (col. 2, lines 36-38).

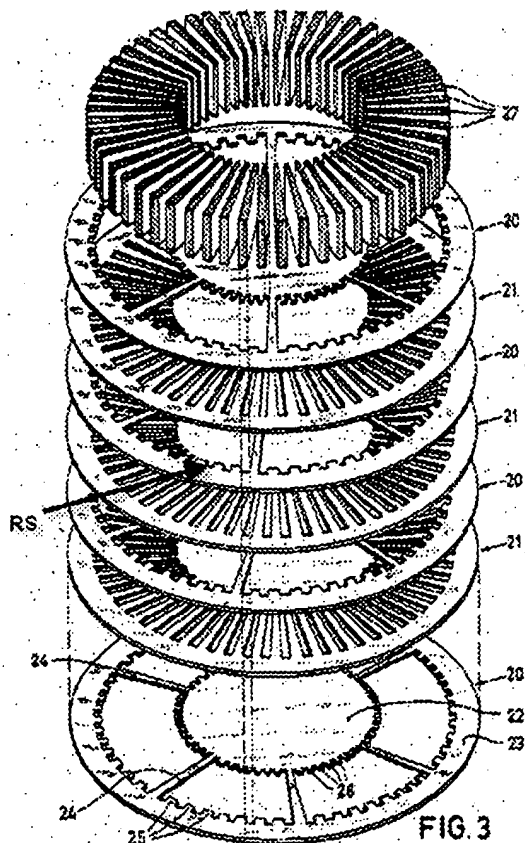
In re claim 13, Forbes et al. '360 discloses the teeth cores (57, Fig. 4 and Fig. 7) comprises multiple of flat lamination layers (col. 6, lines 27-28) forming a constant thickness, said teeth cores inserted into said paired slots (Fig. 7) with said center fixture through an outer opening (Fig. 1) opened to the outer circumference of the stator core (35, Fig. 1).

7. Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. '766 in view of Bakhuizen '225 as applied to claim 11 above, and further in view of Egawa et al. (US Patent No. 6,819,025 B2).

Kim et al. '766 in view of Bakhuizen '225 disclose:

- An annular disk-shaped rotor actuator (5 and 9, Fig. 2 of Bakhuizen '225) and rotor teeth (6, Fig. 2 of Bakhuizen '225) formed by laminations col. 4, lines 27-29)

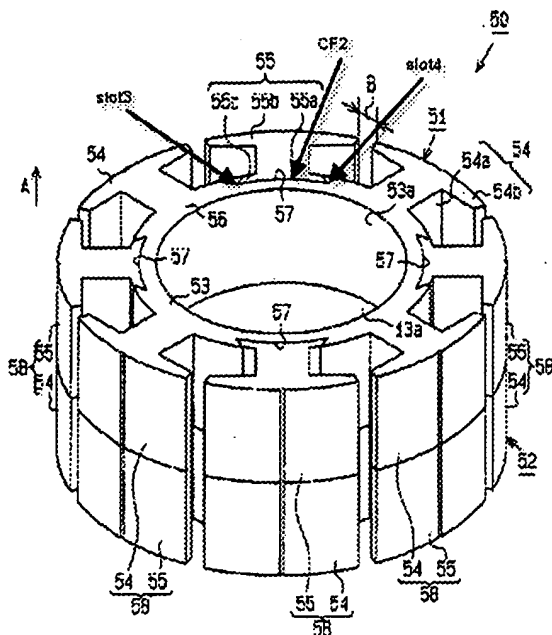
- The annular disk-shaped short circuit (20, Fig. 3 of Bakhuizen '225) having multiple of rectangular-shaped cutout slots (RS, edited Fig. 3 of Bakhuizen '225) at constant intervals for partially exposing the rotor teeth cores (27, Fig. 3 of Bakhuizen '225).
- The annular disk-shaped short circuit (20, Fig. 3 of Bakhuizen '225) is made of copper (col. 4, lines 44-45; col. 5, lines 14-15).



Egawa et al. '025 discloses:

- A rotor teeth core (55, Fig. 38 and 40) with winding coils (59, Fig. 40).

Fig. 38



The advantage of winding coils (59, Fig. 40) on said teeth core of Egawa et al. '025 is to minimize the size of the motor while maintaining performance by the space factor of each coil (col. 14, lines 52-58).

Egawa et al. '025 teaches that it is known to provide rotor teeth core (55, Fig. 38 and 40) with winding coils (59, Fig. 40). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide rotor teeth core (55, Fig. 38 and 40) with winding coils (59, Fig. 40) as taught by Egawa et al. '025, since Egawa et al. '025 states that such a modification would minimize the size of the motor while maintaining performance by the space factor of each coil (col. 14, lines 52-58).

In re claim 15, Egawa et al. '025 discloses an annular disk-shaped rotor core (53, Fig. 38) comprises of multiple paired slots (slot3 and slot4, edited Fig. 38) with a center fixture (CF2, edited Fig. 38) at constant intervals along with a circumference of

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said rotor core with a outward openings (Fig. 38) for inserting the rotor teeth (55, Fig. 38). Bakhuizen '225 discloses an annular disk-shaped rotor core (5, Fig. 2) containing insulating material layers (16, Fig. 2; col. 5, lines 15-17).

In re claim 16, Egawa et al. '025 discloses the rotor teeth (55, Fig. 38) inserted into the paired slots (slot 3 and slot 4, edited Fig. 38) with said center fixture through said outer opening opened to the outer circumference of said annular rotor core.

8. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. '766 in view of Bakhuizen '225 as applied to claim 11 above, and further in view of Caamano (US Patent No. 6,407,466 B2).

Cammano '466 discloses:

- A common shaft (shaft, edited Fig. 12) that has mounted more than one dual rotor (rotor, edited Fig. 12) and dual stator (10a-10c, Fig. 12).

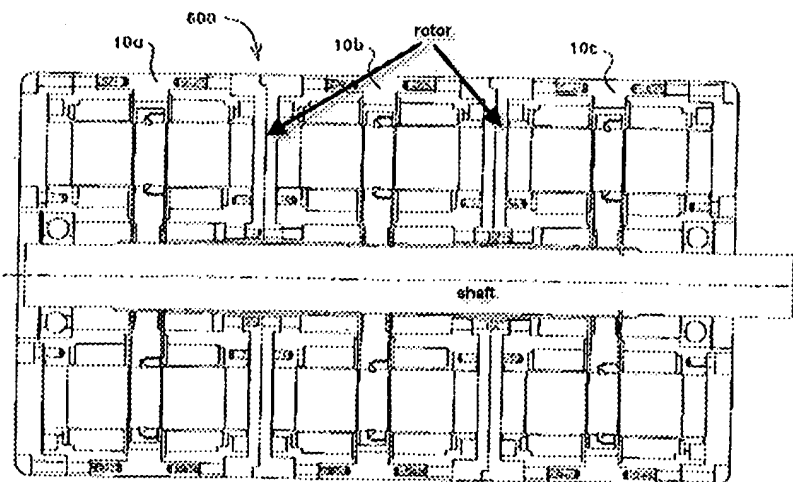


FIG. 12

The advantage of Cammano '466 minimizes the stresses on an amorphous metal magnetic core in an electric motor (col. 2, lines 47-49).

Response to Arguments

9. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection. A new primary reference has been used to for the newly written claims 11-18. Bakhuizen has been used a secondary reference and in response to applicants arguments concerning Bakhuizen; Bakhuizen does in fact teach an annular shaped short circuit which has been described in the previous office action as well as the current final action.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Muszynski (US Publication No. 2002/0079780 A1) discloses paired slots and a center fixture with an opening on the inner circumference of the disk-shaped rotor core. Suzuki et al. (US Patent No. 6,346,759 B1) discloses rotor teeth core with windings on an disk-shaped rotor core.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

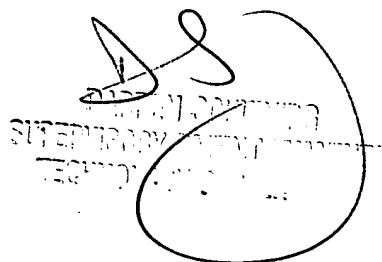
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dustin Jacobs whose telephone number is 571-270-1429. The examiner can normally be reached on M-Th, 7:30am-5:00pm est.; alternate Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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